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SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE • DEC. 13, 1947

Christmas Prelude

See Page 378

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To SCIENCE SERVICE

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TECHNOLOGY DEPT

A telephone listens to a loud speaker in the new "free field" acoustic test room at Bell Telephone Laboratories. The sound-transparent "floor" is built of steel cables.

Test-tube for Sound

This giant "test-tube" is actually an echoless sound room at Bell Telephone Laboratories. Here engineers seek new facts about sound which will help them make telephone service still better.

Bell scientists know a great deal about what happens to sound in electrical systems. This new room will give them a powerful tool to find out more about what happens to sound in the air.

In an ordinary living room, most of the sound addressed to you comes by way of reflections. At 10 feet less than 10% reaches you directly.

Sound that *bounces* at you from walls, ceilings, and your body is all right for hearing—but it poses questions for scientists who would study it uncontaminated by reflections.

The Bell Laboratories "test-tube" gives telephone people the chance to produce pure sound and analyze it reliably with respect to intensity, pitch, and direction. The entire room is lined with glass wool, contained in wire-mesh cases, wedge-shaped to give maximum absorbing area. Sound bounces along the sloping surfaces, sifts into the soft glass wool, and is gradually stifled.

This is one more example of Bell Laboratories' constant work to learn more about everything which can extend and improve telephone service.

BELL TELEPHONE LABORATORIES

Exploring and inventing, devising and perfecting for continued improvements and economies in telephone service.

MEDICINE

Fewer Cripples Foreseen

Streptomycin may prove effective in tuberculosis of the bones and joints as well as of the lungs, the larynx and vocal cords.

► THERE will be fewer crippled children in the future, fewer hunchbacks, fewer men and women limping through life on a stiffened or shortened leg, thanks to streptomycin.

Hailed for over a year as the first drug with real usefulness in tuberculosis, this earth mold chemical is only now being studied as a remedy for tuberculosis of the bones and joints which cripples so many children.

Doctors do not yet know whether it can do as good a job in this form of tuberculosis as it has in other forms of the great white plague.

"But there is reason to hope," says Dr. H. Corwin Hinshaw of the Mayo Clinic, "that streptomycin alone or in combination with surgery may be of considerable help in some of the most baffling problems in this field."

Scores of persons, many of them infants and young children, who would have died two years ago of tuberculous meningitis or of another previously always fatal disease, miliary tuberculosis, are alive and well today and "may be regarded as cured," he said.

Streptomycin has not cured all patients with this form of the disease, which kills thousands annually. But it is the only effective remedy in these forms of the disease.

Effective for Larynx

The earth mold chemical has been effective very promptly and in a very high percentage of cases of another form of tuberculosis. This is the dreaded and painful type which involves the larynx and vocal cords. A somewhat similar type of tuberculosis may produce ulcers in the windpipe and larger bronchial tubes. This type which has been so hard to cure by other forms of treatment responds very well to streptomycin.

Tuberculosis of the lungs accounts for more than 90% of tuberculosis deaths. This type of the disease is a destructive process, and lung tissue which has been destroyed cannot be regenerated. But there "is no longer any doubt," Dr. Hinshaw said, "that streptomycin has very great value in some of the most fulminating types of lung tuberculosis."

Streptomycin, Dr. Hinshaw emphasized, is not the only treatment for tuberculosis. Just as the pneumonia patient who gets penicillin treatment must go to bed and be given other helpful remedies, the tuberculosis patient who gets streptomycin will need to rest in bed and get other forms of treatment as well as the mold drug. And like the pneumonia patient cured by penicillin, the tuberculosis patient who gets streptomycin also needs to be guarded during the convalescent period.

Price Now Low

Speaking in New York at the presentation to Merck and Company of the biennial award for chemical engineering achievement given by *Chemical Engineering*, McGraw-Hill publication, Dr. Hinshaw said that two and three years ago anything said or written about streptomycin had to be guarded because scientists then feared that streptomycin would never be made in sufficient quantity or at a low enough price to make it available to the hundreds of thousands suffering with tuberculosis. This situation is changing, he said, and the one gram a day now considered enough in many types of tuberculosis now costs only a few dollars.

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GENETICS

Vitamin Content Is Being Bred into Hybrid Corn

► VITAMINIZING corn by breeding changes into its chemical make-up is being undertaken by Pennsylvania State College scientists, L. W. Aurand, R. C. Miller and L. L. Huber.

Striking differences between the carotene content of some inbred lines of corn was found by them in experiments reported in the journal, *Science* (Nov. 21). Carotene is the yellow color which is changed to vitamin A in the body of humans and other animals.

The genetic constitution of corn may be responsible, in large part, they state, for its content of carotene.

In developing new corn hybrids, they suggest, attention should be given to the content of important nourishing factors, of which carotene is one.

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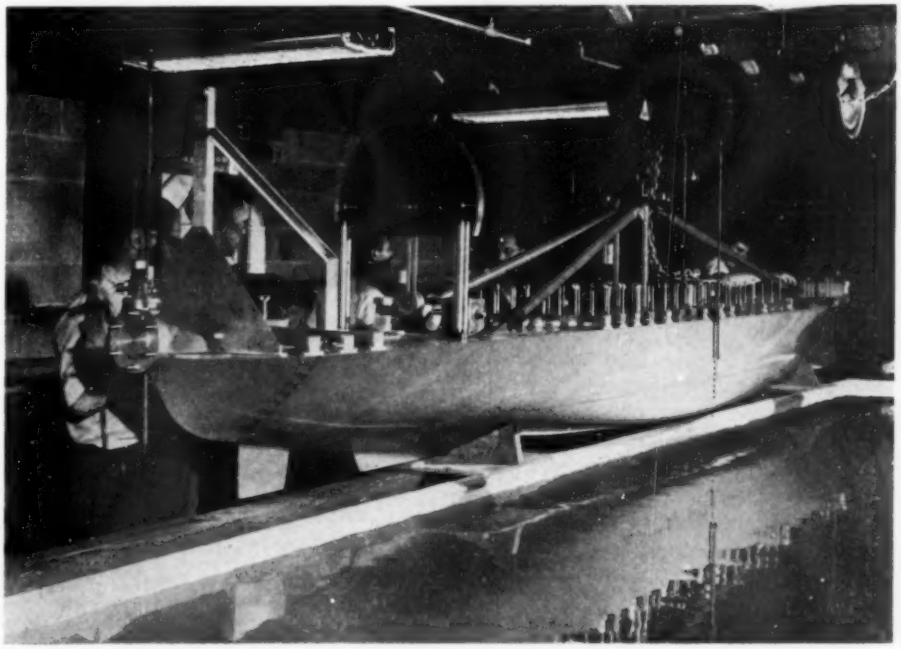

***MODEL CARRIER**—This 20-foot scale wooden model airplane carrier was installed in a testing tank at the Stevens' Institute of Technology Damage Conrol Research Laboratory to determine, if possible, how stable a ship is after she is damaged, when it is safe to continue fighting her, and at what moment it becomes necessary to abandon ship.*

MEDICINE

Two New Drug Hazards

Warning is given that methadon, potent synthetic substitute for morphine, is habit-forming and chewing paper strips inside benzedrine inhalers may cause poisoning.

➤ METHADON, potent new synthetic substitute for morphine which has just come on the market, can cause addiction, or drug habit, just as morphine itself can.

And if you chew or swallow the paper strips inside benzedrine inhalers, you can get poisoned, hear voices, get crazy ideas, and may even die.

Warnings on these two new drug hazards, appearing in the *Journal of the American Medical Association* (Dec. 6), were given by two groups of doctors.

Two Groups Give Warning

The one on methadon is from a group of U. S. Public Health Service doctors. That on benzedrine is from two psychiatrists formerly on the staff of the Branch U. S. Disciplinary Barracks at Fort Benjamin Harrison.

Methadon was first synthesized in Germany and called 10820. It is also known as amidon and dolophine. Its success in relieving pain in cancer patients and in suppressing withdrawal symptoms in morphine addicts when they were taken off morphine is reported by Drs. Harris Isbell, Abraham Walker, Nathan B. Eddy, John L. Wilson and Clifford F. Moran of the U. S. Public Health Service.

But persons getting the drug develop tolerance to its pain-relieving and sedative, or quieting effects so that larger doses are needed after a short time. The tolerance to the pain-relieving effect develops quickly. That to the sedative develops more slowly than tolerance to morphine's sedative effect. Doses needed to relieve pain are about one-third to one-fourth those of morphine.

Methadon has been proclaimed a habit-forming drug similar to morphine and has been put under the federal narcotic laws governing the sale and dispensing of morphine and other opiate drugs. That such action was needed to prevent cases of methadon addiction appears from the Public Health Service scientists' report. They gave the drug to former morphine addicts under treatment at the Service's Lexington, Ky., Hospital. Most of these men liked the drug and said its effects were similar to those of morphine and heroin. Typical comments were:

"This is great stuff. I wouldn't have believed it possible for a synthetic drug to be so like morphine. Can you get it outside? Will it be put under the narcotic laws? I wish I could get some to kick my next habit."

Misuse of benzedrine inhalers to get a kick or a lift is apparently widespread. Drs. R. Monroe of Orangeburg, N. Y., and Hyman J. Drell, of Chicago, found one-fourth of the inmates of the Disciplinary Barracks using these inhalers in this way. More than half of the group had been taking the drug in civilian life.

Benzedrine, or amphetamine, can be habit-forming and can cause convulsions, symptoms of insanity, high blood pressure, and even death. Doctors have long warned against its indiscriminate use and it is listed as a dangerous drug under the federal pure food, drug and cosmetic law. Many states forbid its sale without a prescription.

Benzedrine Inhalers

The inhalers, however, can be bought at every corner drug store. Those who want a benzedrine kick break the inhalers open and chew the paper strip which is impregnated with the drug. Since this method of taking it irritates the inside of the mouth, some soak the paper in coffee or an alcoholic drink to get the drug.

Others chew bits of the paper strips in chewing gum or wrap a moistened strip in cigarette paper and swallow it.

On the paper strip in the inhalers is printed: "Warning: For Inhalation Only! Unfit for Internal Use. Dangerous If Swallowed." But this warning does not seem to stop misuse of the inhalers.

Crazy ideas, hearing voices, acute pain and other abdominal symptoms suggesting appendicitis, were among the symptoms of benzedrine poisoning in the users seen by the two psychiatrists. Chronic cases showed aggressive and rebellious behavior, poor judgment, lack of self-control and loss of sleep, appetite and weight.

Injection of ascorbic acid, or vitamin C, may prove to be a successful treatment for the acute poisoning. Solution of the problem of dangerous misuse of benzedrine inhalers would be development of an inhaler containing a drug effective for clearing stuffy noses that would not be absorbed from the stomach and intestines if swallowed. The present trend toward using chemicals with a local action on the blood vessels of the nose but which do not have much effect on the brain and central nervous system is praised by the psychiatrists as "a step in the right direction."

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Insecticide chemists are trying to develop a method of extracting *nicotine* from green tobacco plants in order to eliminate the time and trouble of drying them.

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MEDICINE

Hope To Cure Fatal Tumor

Prospects for cure of a cancer-like disease known as lymphoid tumor are better. May be successfully treated if diagnosed early. X-rays shrink the tumor and relieve pain.

➤ PROSPECTS for cure of lymphoid tumors, which are a kind of cancer, are better than physicians and X-ray specialists have generally believed, Drs. Hugh F. Hare, William C. Mulray and C. Franklin Sornberger of the Lahey Clinic declared at the meeting in Boston of the Radiological Society of North America.

But the doctors stressed that early diagnosis and treatment are essential for successful treatment.

If untreated, lymphoid tumors invariably kill the patient.

The condition starts insidiously. Enlargement of the lymph nodes, or glands, of the neck are the first symptom. This frequently follows a cold or similar infection, but the swellings do not go down entirely, or may remain the same size. Lymph nodes are found in many parts of the body besides the neck. They occur in the armpits, around the roots of the lungs, around the intestines and in the groins. Any of these may be involved, and the disease may become generalized before the diagnosis of lymphoid tumor is considered.

"Up to the present, our attitude toward the treatment of this disease has been one of looking upon it as hopeless rather than curable," the doctors stated. "This feeling of hopelessness has spread not only to the general practitioner and the laity but also to the specialist.

"Recent reports indicate that a different situation is present. We believe that some of these patients may be cured and many of them lead a happy and healthy life for a period of five years and more."

Of 181 patients seen during the years 1934 to 1942 inclusive, 52, or 29%, were living and well at the end of five years and of 21 patients followed for a 10-year period, 17 remained alive and well.

No other tumor, the doctors said, responds as quickly as lymphoid tumor to X-ray treatment. The X-ray treatment helps shrink the tumor and relieve pain.

Stressing the importance of early diagnosis and X-ray treatment, the doctors pointed to records showing that about 16 months elapsed from the time the disease started to the first treatment. Loss of weight, fatigue, fever, weakness and pain are late, not early, symptoms.

"When it is considered that 50% of patients suffering with this disease are dead within one year following establishment of a diagnosis, it is realized how many patients come for treatment far too late."

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MEDICINE

Control of Bleeding Foreseen with New Methods

➤ EMERGENCY measures which saved patients who were bleeding to death from the esophagus, or gullet, may give doctors a better way to control this condition, it appears from the report of a group of doctors in the *Journal of the American Medical Association* (Nov. 8).

The condition is a frequent cause of death in patients with cirrhosis of the liver. Known medically as esophageal varicosity, it is like varicose veins in the legs, occurring in veins of the esophagus instead of the legs.

Elevated blood pressure in blood vessels of the liver and spleen produces the swollen veins in the esophagus, which is the food channel leading from the mouth to the stomach. Until the present, no method has successfully controlled hemorrhage of these distended veins.

Drs. Max L. Som and John H. Garlock, of Mount Sinai Hospital, New York, discovered that by surgically opening the mediastinum, a membranous cavity situated between the left and right lungs, and packing this area, irritation resulted which established a secondary circulation in new deeper vein channels more capable of carrying the elevated blood pressure.

With this surgical treatment, one patient has been free from bleeding six years and another for 14 months.

Another group of doctors, L. G. Rowntree, E. F. Zimmerman, M. H. Todd and John Ajac of Miami Beach, Fla., saved the life of a patient bleeding to death by devising a latex bag which they inserted into the esophagus and inflated at the site of the hemorrhage. This internal pack was left in place for four days without any discomfort to the patient and completely controlled the bleeding. The patient's health improved and although he had a recurrence of the bleeding within a month, it was immediately controlled by this method.

Success with this patient led the physicians to employ the same method of control on another patient at the Nautilus Hospital of the Veterans' Administration, whose esophagus bleeding could not be stopped by other measures. The tube was again inserted and apparently helped this patient to recovery also.

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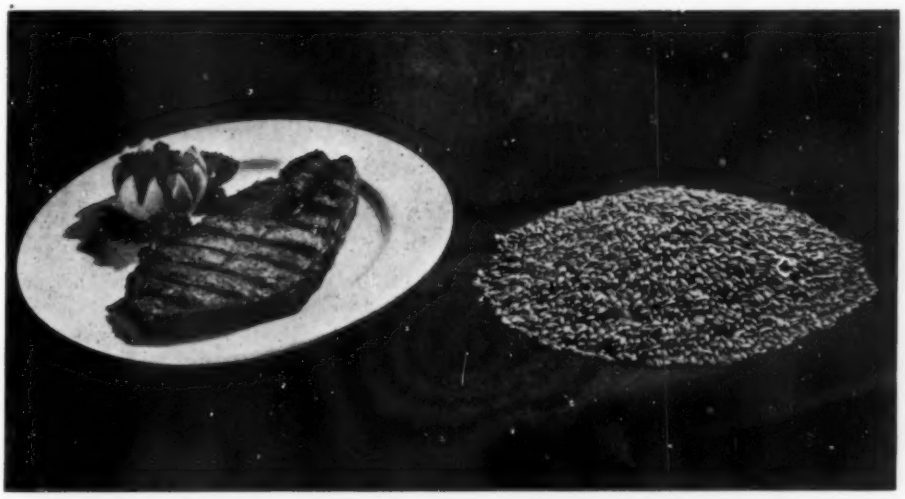

CONSERVING GRAIN—Each portion of fish served in place of grain-fed meat saves the equivalent of one pound of wheat as illustrated above. According to the Department of Agriculture it takes the following quantities of grain to make one pound of edible meat: Beef, 2½ pounds; Lamb, 1½ pounds; Pork 5½ pounds; Poultry, 5 pounds.

MEDICINE

Crayons May Hold Danger

The coloring used in some wax crayons may be poisonous when eaten by a child. Most parents and physicians seem unaware of this danger.

➤ WAX crayons, common playthings of most children, are really a greater menace than most parents realize. The case of a little boy who ate two of them, was poisoned, and almost died is reported in the *Journal of the American Medical Association,* (Dec. 6).

Parents, supervisors and doctors believe that no harm will result from eating these crayons, declares Dr. Esther B. Clark of the Palo Alto Clinic of Palo Alto, Calif. She, herself, shared this belief until her experience with this case. The danger, apparently, is that of the coloring matter put into the wax of the crayon becoming converted into an aniline dye in the body with serious if not fatal results.

A two-year-old boy in critical condition was brought to her office. The nurse at the child's nursery school thought he was having a heart attack. He was intensely blue, with nearly black lips. Since a physical examination revealed his heart and lungs to be normal, poisoning was suspected and he was given an X-ray examination which revealed foreign matter in his stomach and intestines. Immediately his stomach was washed out and large quantities of orange and yellow crayon were obtained.

While the wax crayons were being washed out of his stomach and intestines, the boy was in very bad condition; his skin became cold and damp; he lost his gag reflex; his whole body was a blue-black color and the blood taken for blood count was chocolate brown.

He was then put in an oxygen tent and given a transfusion. In nine hours he showed improvement and by the next morning his color was almost normal, he talked, ate and drank normally, and walked around in his crib.

Dr. Clark points out that both the mother and father had noticed the bluish color of the boy the night before and "his mother tried to wash the blue color off his hands, thinking that it was paint." It was not until late the next morning that illness was suspected.

The physician thinks it significant that although the nurse observed him eating a crayon and scooped it out of his mouth, it "was considered to be so harmless that the fact was not reported, and was brought out only on questioning."

"The use of para red or other coloring material which could possibly be converted into paranitroaniline, or into other aniline dye in the body, should certainly be discontinued in the manufacture of crayons intended to be used by children," Dr. Clark declares. "If their use is to be continued, warning of danger should be placed on the crayons and on the box."

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NUTRITION-PSYCHOLOGY

Babies Need Mother's Milk

➤ BREAST-FEEDING for babies now gets an official OK by one of the nation's top scientific bodies, the National Research Council. A report by one of its committees, published in the *Journal of the American Medical Association,* (Dec. 6), states that babies need their mother's milk for its nutritional value and to make them stable emotionally, to give them a feeling of security and to establish normal mother-child relationships.

Dr. C. Anderson Aldrich of the Mayo Clinic is chairman of the committee.

The infant is not the sole beneficiary of this relationship, for the mother matures physiologically and psychologically by performing her normal maternal duties, the report states. But the committee finds that concrete proof of the psychological value to the mother of feeding her infant is badly needed.

Infants belonging to lower-income families are especially benefited by receiving mothers' milk because they lack the attention of a skilled physician. Human milk prevents or decreases the severity of many intestinal disturbances, is an economical food for infants and can usually be fed safely in amounts required without having to compute caloric value.

Women who are to become mothers should be educated to correct attitudes which now make many mothers reluctant to feed their babies. Some of the reasons given for this reluctance are disgust, loss of a good figure, nervousness, fear of getting fat, objections of the husband, shame at having to nurse the baby before the other children, painfulness of the experience or feeling that the routine is too confining.

On the other hand, if the mother is in poor health or is ill, with tuberculosis for example, she should not be allowed to feed her baby. In such instances the infant will get approximately the same amount of gratification and close contact with the mother if properly held during bottle feeding. It is generally believed that infants should not be fed while they are lying on a table or bed, or by means of bottle proppers.

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MEDICINE

Streptomycin May Aid Patients with Vertigo

➤ A NEW use for streptomycin, famous mold chemical which has proved a valuable remedy for many infections, was reported by Dr. Edmund P. Fowler, Jr., of New York at the meeting of the American Academy of Ophthalmology and Otolaryngology in Chicago.

Vertigo is the condition for which Dr. Fowler tried streptomycin, with benefit to some patients. There is a kind of poetic justice in this, since vertigo is one of the unpleasant symptoms that has occasionally afflicted patients getting streptomycin for treatment of some infectious diseases.

Dr. Fowler used the mold chemical for a kind of vertigo typical of middle ear disturbance. Its use for this condition was suggested by Joseph E. Hawkins, Jr., of Merck and Company.

Vertigo is a peculiar and often disabling condition in which the patient feels that the world is revolving around him or that he is revolving in space. It is not the same as the dizziness which is a feeling of unsteadiness and of movement within the head. It may result from disease of the middle ear, Meniere's disease, or organic brain disease.

Dr. Fowler believes streptomycin probably should not be used for any patient with vertigo who is over 50 years old.

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MEDICINE

Conserving Penicillin

Although this mold remedy is in tight supply, the shortage is described as "not serious" because substitutes can be used and doses can be decreased.

➤ YOU do not have to worry about the penicillin shortage if you or one of your relatives or friends gets sick.

The famous mold remedy for many serious germ diseases is in very tight supply but the shortage is described as "not serious," by Dr. Henry Welch of the U. S. Food and Drug Administration's penicillin division.

Penicillin can be conserved by using smaller doses and by using two sulfa drugs, sulfamerazine and sulfadiazine, Dr. Perrin Long, professor of preventive medicine at Johns Hopkins University, states.

Penicillin production has been averaging three thousand billion units a month, Dr. Welch reports, but even though manufacturers are producing more than ever before, they cannot keep up with the demand, which is greater than ever before. Dr. Welch says he has not heard of anyone having to go without penicillin, but that many hospitals have not been able to buy all they wanted.

The shortage of penicillin is due somewhat to the fact that doctors are now using it in more adequate dosage, Dr. Welch says.

In many cases they are giving more than necessary, Dr. Long finds. Dosages of penicillin were stepped up to 40,000 and 100,000 units about 18 months ago. This was the same time when much penicillin K was getting on the market. K turned out to be relatively ineffective and manufacturers went back to producing penicillin that is predominantly G. This penicillin is effective in most cases in dosages of 25,000 units, Dr. Long states. In some diseases, such as the heart disease known as subacute bacterial endocarditis, larger doses are needed.

A good deal of penicillin is wasted, or "goes down the sink," as Dr. Long puts it, in preparations made to be given by mouth. It takes five times as much penicillin per dose for effective treatment with these preparations for taking by mouth, though of course they are easier to take and give than the penicillin that must be injected with hypodermic needle.

Streptomycin, mold remedy that is penicillin's ally, is being produced in adequate amounts, Dr. Welch reports, and can be used instead of penicillin in some conditions.

For most streptococcus infections, sulfadiazine and sulfamerazine can be used instead of penicillin, Dr. Long points out. For meningitis due to the germ called meningococcus, he says, there is nothing to show that penicillin is any better than these sulfa drugs.

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CHEMISTRY

New Cheap Resin Alcohol Being Produced from Rosin

➤ A NEW low-cost resin alcohol from rosin from American pine trees of the South is now commercially produced, Hercules Powder Company revealed. It is a chemical which has wide potential uses in industries ranging from textile to varnish making.

The new product is called hydroabietyl alcohol. It is the first commercially available primary alcohol to be developed from rosin. It is a viscous liquid at room temperature and is colorless. Unlike most commonly used alcohols, it does not mix with water.

Valuable products that may be derived from hydroabietyl alcohol are resins, foamers, detergents, wetting agents, plasticizers, corrosion inhibitors, antioxidants, parasiticides, bactericides, and compounds highly stable to ultraviolet light. The alcohol will find uses in such industries as textile, rubber, adhesive, detergent, paint, varnish and lacquer.

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ENGINEERING

Hurricane-Proof Houses Constructed on Guam

➤ HURRICANE-proof houses of precast concrete are under construction at Guam island in the western Pacific for use by Navy island-based families.

They are designed to resist earthquakes, fire, insects and rodents. Materials for the houses are shipped to the island in bulk, and the wall and roof panels are molded, finished, surface-treated and cured where they are cast. The parts are then taken to the home site and erected on a concrete foundation and floor already laid.

Instead of windows, the buildings have screened door-like openings on three sides, all equipped with Venetian blinds. This permits ventilation, an essential in Guam's hot climate. Inside partitions are plywood. Kitchen and bathrooms are completely modern, and all services are electric. The wide overhanging roof, to give protection against hot sun and heavy tropical rains, is of built-up asbestos for insulation.

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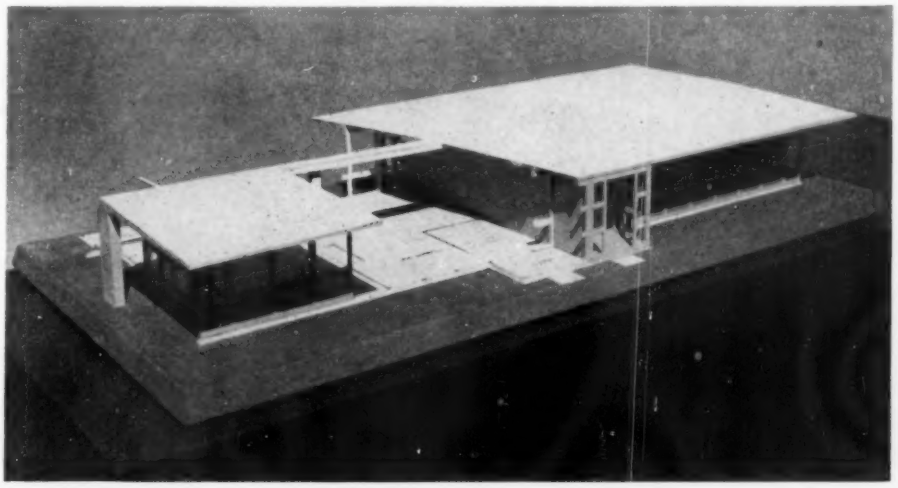

***HURRICANE-PROOF HOME**—This is an incompleted model of the precast concrete homes under construction at Guam island for use by families of Naval personnel. They are designed to resist earthquakes, fire, insects and rodents.*

MEDICINE-BACTERIOLOGY

Germs from the Sea May Aid Cancer Fight

➤ GERMS from the sea may become future weapons against cancer. This possibility is suggested by Drs. Frederick D. Sisler and Claude E. ZoBell, of the Scripps Institution of Oceanography, in a report to the journal, *Science*, (Nov. 28).

So far, it is only a possibility and one which cancer researchers and other medical scientists will have to investigate further. The California scientists got the idea in the course of a survey of the part bacteria play in decomposing petroleum hydrocarbons and chemically related compounds.

Some of the petroleum hydrocarbons have long been known as chemicals that could cause cancer in experimental animals, and, in some cases, in man. Chimney-sweeps' cancer is an example of a human cancer which was due to the irritating action of coal tar chemicals in soot in chimneys.

Cancer-causing petroleum hydrocarbons are among the chemicals which marine bacteria can decompose, the California scientists found. The bacteria, like other bacteria from the sea and the soil and some molds and yeasts, use the coal tars as a source of energy.

The action of the bacteria in breaking down hydrocarbons to get energy might be applied, the California scientists suggest, to the prevention or treatment of cancer.

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CHEMISTRY

New Powerful Insecticide Makes Chickens Inedible

➤ BENZENE HEXACHLORIDE, though a powerful insecticide, is not good for use around chickens, warn Prof. Ephraim Hixson and Dr. Martin H. Muma in *Science*, (Oct. 31). Their flesh will become so ill-flavored as to be inedible if the compound is sprayed on the birds themselves or on the walls of their house, or if it gets into their food.

The two men kept chickens in contact with benzene hexachloride in all three ways last summer. The chickens themselves apparently didn't like the taste of the insecticide, for when some of them were offered grain on which it had been sprayed they preferred starvation to eating it.

After groups of chickens had been exposed for periods of from two to ten weeks, they were killed and cooked; then their meat was sampled for odor and taste. They were all noticeably tainted.

Since benzene hexachloride, known also as Gammexane and 666, has been used in poultrymen's insecticide mixtures by some manufacturers, Prof. Hixson and Dr. Muma consider a warning to be called for.

But this "socially impossible" insecticide has had its handicap turned into an advantage in at least one case, U. S. Department of Agriculture scientists report.

Benzene hexachloride has been used effectively against a highly specialized cattle parasite in the Southwest, a tick that attacks only the insides of the animals' ears.

Pine oil containing from three to five percent of benzene hexachloride, when squirted into cows' ears, not only kills the ticks already present but serves as a repellant to hold new attackers at bay for at least 17 days. Counting both killing and repellant action, one dose "deticks" a cow for about a month, at the cost of one cent per ear.

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ENGINEERING

Giant Harbor Dredge Will Remove 6,000 Tons an Hour

➤ A GIANT dredge to maintain sea approaches to New York harbor will soon be in operation. It is an ocean-going dredge with a capacity of sucking up 6,000 tons of dirt and muck from ship channel beds every hour.

The new dredge, especially designed for the New York harbor, is the latest weapon in the U. S. Corps of Engineers' constant battle to keep harbors and approaches navigable. The dredge is a product of Sun Shipbuilding and Dry Dock Company, Chester, Pa. All steam and electrical equipment were built by Westinghouse. It is a twin-screw turbine-electric vessel, propelled by two 4,000-horsepower motors.

For dredging, it has two giant swivel-jointed steel tubes 100 feet long projecting from the sides of the vessel. In action these are lowered until their mouths drag along the bottom of the channel. Then, two 1850-horsepower pump motors go into action, sucking up 100 tons of mud per minute.

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IN SCIEN

BIOPHYSICS

Roses and Rats to Show Radioactive Effects

➤ ROSES and rats will be used in demonstrating biologic effects of radioactive elements, at a conference on the use of radioactive isotopes in agricultural research, to be held at the Alabama Polytechnic Institute Dec. 18 through 20.

Dr. Ralph T. Overman of the Clinton National Laboratory at Oak Ridge, Tenn., stated that he will immerse a rose branch with one open flower and one bud in a solution of radioactive phosphorus, and after a time measure the radioactivity in various parts of the plant. From past experience, it is expected that the bud will show the greatest intensity of radioactivity.

White rats will be used to show how various elements and compounds "tagged" with radioactivity travel through the animal body and become concentrated in particular organs. A familiar example is the rapid accumulation of radioactive iodine in the thyroid gland, making the rat's throat region the most active when tested with detecting instruments. Another is the absorption of radioactive potassium into the red cells of the blood.

Science News Letter, December 13, 1947

ELECTRONICS

Radar Users in Colleges Need Government License

➤ RADAR users in training courses in college laboratories have received a note of warning from the Federal Communications Commission. Both station and operator licenses must be obtained from the government before starting to use the equipment. This precaution is to prevent interference with the transmitters of recognized radio services.

Most of the radar equipment in use in college training courses was obtained from surplus army stocks. It is used primarily in training engineering students on radar techniques. The Commission realizes the need for such training but does not intend to let student equipment interfere with established radio services, particularly radio and radar navigational aids.

Science News Letter, December 13, 1947

E FIELDS

NUTRITION

Potatoes Top Vegetable, Year's Survey Discloses

➤ AMERICANS in general are still "meat and potato" people, a survey made by New York's state college of agriculture at Cornell University indicates.

The survey was made of vegetable purchases in the course of a year at three stores. Potatoes accounted for more than 42% of the 1,500,000 pounds.

Forty-six different vegetables were included, with lettuce ranking as a poor second to potatoes in popularity. Out of every 100 pounds of vegetables, seven and a half pounds were lettuce, six were dry onions and celery, cabbage and carrots each claimed five pounds.

Potatoes also cost the most money in the vegetable budget, with tomatoes ranking second.

Science News Letter, December 13, 1947

ARCHAEOLOGY

Remains of Indian Life at Site of New Reservoirs

➤ ARCHAEOLOGISTS, racing against time in areas to be flooded for dam construction projects, this summer located more than 500 sites of Indian life which will be underwater in new reservoirs in the Missouri basin.

The survey of Indian sites in the basin was conducted by the River Basin Surveys of the Smithsonian Institution under the field direction of Dr. Waldo R. Wedel of the U. S. National Museum, with Dr. Frank H. H. Roberts, Jr., associate chief of the Bureau of American Ethnology, directing the entire project. Cooperating in the preflooding archaeological studies are the Bureau of Reclamation, National Park Service and the Corps of Engineers of the Department of the Army.

Plans call for the most important of the sites to be excavated for detailed study before the man-made flood is set loose.

Remains of at least a thousand years of human life have been discovered in 93 Indian sites recorded where Fort Randall Reservoir will be located in South Dakota.

Perhaps ten times as ancient remains may be scheduled for flooding in areas in Montana and Wyoming, the survey indicated. Other remains, of a time before the Indians learned the art of pottery, were found in the Garrison reservoir area in North Dakota and in Nebraska at the proposed site of the Medicine Creek reservoir.

Construction is already underway at the Bald Hill reservoir on the Sheyenne river in North Dakota. This area has been identified as being on the path followed by ancient immigrants coming into the great plains from the eastern woodlands.

Science News Letter, December 13, 1947

METALLURGY

Metal Bars Tested By Magnetic Comparison

➤ WHETHER a metal rod containing iron in a stock pile is identical with a standard specimen in composition and characteristics can be determined by a simple instrument that compares their electrical or magnetic quantities, the Instrument Society of America was told by D. E. Bovey of the General Electric Company.

The instrument, a war development with improvements, is called a metals comparator. It is relatively small and inexpensive, and so simple to operate that it can be used for inspection in stock rooms or on a production line. Its use in no way injures the metal being tested.

The comparator consists of a solenoid, a coil of wire through which an electric current is passed to create a magnetic field, which forms one leg of a balanced circuit. The other leg is a variable resistance that can be changed until the circuits from the two legs are in balance. In use, the standard specimen is inserted in the solenoid first and a balance obtained. Then the rod of unknown properties is inserted in the coil. If the balance holds, it is identical with the specimen in composition and characteristics. In searching the stockpile for an identical metal, one rod after another is tested until one is found that holds the balance. Rods can be used as fast as they can be insterted in the solenoid.

The instrument has been used to differentiate between annealed and unannealed steel bars. It has also been used to sort finished metal parts, including plated parts, on the basis of composition or heat treatment. Ferrous metals can be assorted on the basis of average hardness. Materials or parts to be tested need not be wiped, cleaned or otherwise specially prepared.

Science News Letter, December 13, 1947

PALEONTOLOGY

Story of Ancient Animals Learned from Skeletons

➤ LEARNING what the lobster's oldest uncles were like by studying their cast-off garments is the task to which a leading English scientist, Dr. H. B. Whittington of the University of Birmingham, devoted himself at the U. S. National Museum in Washington.

The animals are trilobites, creatures that dominated earth's primal seas a half-billion years ago. They had jointed outside skeletons, like present-day lobsters and shrimp; though their kinship to modern crustaceans is extremely distant. They have, as a matter of fact, no direct descendants and no really near relatives.

Dr. Whittington was in Washington to study them partly because the Shenandoah valley, not far from there, is one of the world's best hunting grounds for trilobite fossils. There they can be found in all sizes and stages of development—for they shed their outer crusts from time to time as they grew, just as present-day lobsters and crabs do. It thus becomes possible to work out a trilobite life-cycle, from infancy to full growth, by examining series of these shed shells, just as you could tell a good deal about a long-departed great-uncle if you found a chest full of the clothes he had worn from the time he was seven until he was seventy.

The fossils in the Shenandoah valley belong to the heyday of the trilobites, when they were the highest form of life on earth. That was about 400,000,000 years ago, in the Ordovician geologic age. These were not the earliest trilobites, however. More primitive forms at least 100,000,000 years older are known; and it is practically certain that there were others, as yet undiscovered, much older than that, for these earliest ones, of Cambrian age, were already quite diversified and highly evolved.

Science News Letter, December 13, 1947

ENGINEERING

Coal Is Made Dust-Free By Coating with Asphalt

➤ COAL is made dust-free by coating with asphalt from a colloidal suspension in water, in the process on which patent 2,431,891 was granted to C. R. Rosencranse of Pittsburg, Kans. All grades of coal, from anthracite through bituminous to lignite, can be thus protected, the inventor states.

Science News Letter, December 13, 1947

BOTANY

Know Your Christmas Tree

The most popular and most widely marketed are the spruces, Douglas and fir trees, which are of the single-needle class. The needles reveal the type of tree.

By DR. FRANK THONE

See Front Cover

➤ CHRISTMAS trees are beginning to appear in the markets. Within the coming fortnight every city in the land will be invaded by a forest of little evergreens, which on Christmas Eve will blossom with lights and bear strange but appetizing fruit of gifts and goodies.

Almost as varied as the ornaments that deck their branches are the little trees themselves. Almost every part of the country where trees grow at all produces its own local Christmas-tree species, and in addition there are a few kinds so abundant and so widely used that they can almost be looked upon as "standard" Christmas trees. You don't have to have a Ph.D. in botany to know your Christmas tree; a very few easy identification characters will usually give you its name.

Formation of Needles

First thing to look for is whether the needles are borne singly, or two or more in a cluster. By far the greater part of the trees that come to market, especially if they come from a distance, are of the single-needle class—either spruce, or Douglas, or fir. Trees of this group are popular because their foliage is dense and glossy green, and because it sticks to the twigs longer than the needles of most other conifers.

Spruces are probably still the most widely used of the Yuletide trees. They are easily identifiable: their needles are short (one-half to three-quarters of an inch) and very stiff and sharp-pointed, and they stick out at all angles to the twigs. Each needle stands on a tiny raised place, that remains as a prickle when it falls off. Sometimes even small trees have cones; these are thin-scaled, and hang down.

Firs are cousins of spruces. They make the most beautiful of all Christmas trees, but are far less frequently met on the market. Their needles are usually longer than those of the spruces; they are much softer, do not have sharp points, and are frequently curved. Although they spring from all sides of the twig, their bases bend around in such a way as to give them a two-ranked appearance. Their cones, when they have them, are like thick candles that stand straight up, instead of hanging down like those of the spruces.

Douglas, which is a kind of intermediate between spruces and firs, is a botanical orphan. It has been called Douglas spruce and Douglas fir, and its lumber has sometimes been sold under the name of Douglas pine. Its technical name, Pseudotsuga, is a hybrid word (half Greek, half Japanese!) that means false hemlock. Yet the tree is neither spruce, fir, pine nor hemlock.

Douglas Cones Unique

Despite the hardships of being a botanical Cinderella, the Douglas makes a fine Christmas tree. So much so, that although it is native only to the northwestern states, it is now sold in Eastern markets in competition with spruces. It has sharp-pointed needles, but they are less stiff than those of spruces, yet stiffer than those of the firs. Its cones are absolutely unique: from between each pair of scales springs a narrow, three-pointed appendage.

These, then, are the most popular, most widely sold Christmas trees. They are often hauled hundreds of miles to market, and Christmas-tree farms where they are raised especially for the holiday trade are becoming increasingly numerous. The plantings set out by the late President Roosevelt at Hyde Park constitute perhaps the best-known farm of that sort, though by no means the largest one.

Most Christmas trees, however, are not farm-grown, but represent thinnings in natural or planted forests, where part of the young trees have to be taken out to give the rest a chance to grow into usable sizes. The Yuletide market offers an opportunity to help pay for the labor of thinning.

In addition to this relatively small group of what might be termed "national" Christmas trees, there are many others that are harvested locally. One of the most widespread of these is another misnamed tree; a juniper that is usually called red cedar or Virginia cedar. It is a peculiar conifer in that its cones have evolved into fleshy berries, with a strong resinous flavor. Red cedar is an attractive tree and is used a good deal for holiday purposes. It would be more popular but for an unfortunate, messy habit of shedding its needles early and copiously.

Close Cousin of Red Cedar

A fairly close cousin of the red cedar is arbor-vitae. This tree is also a berry-bearing conifer; its leaves are not even needles, but have become small, scale-like affairs so closely pressed against the finely-branched twigs that they present an almost fern-like appearance. It is not as well shaped for Christmas-tree purposes as other trees, having a tall, slender, columnar growth habit. Nevertheless it is sometimes used.

All the conifers thus far discussed are of the single-leaved type. Contrasted with them is the one large group that has its needles in pairs or clusters, the pines. Even the shortest of pine needles are longer than those of the spruce-fir

HARVESTED LOCALLY—This red cedar makes an attractive Yuletide tree, but because of an unfortunate, messy habit of shedding its needles early and copiously, it is not widely marketed.

MOST WIDELY USED—This spruce owes its popularity to the fact that its foliage is dense and glossy green and it sticks to the twigs longer than the needles of most other conifers.

group; pine needles are almost never less than two inches long, and in a few noble species they may be as much as a foot in length. Moreover, their cones have thick, heavy scales instead of the thin scales found in the spruce-fir group. There should be no mistaking a pine, if that is your Christmas tree.

Practically all little pines found on the holiday market are cut near the places where they are sold. They do not command as high prices as spruce or Douglas, so long hauls are usually uneconomic for them. All the Eastern states, and most of the Southern and Midwestern states east of the Mississippi, have one or more kinds of pines that spring up thickly in cut-over or burned-over timberlands and take possession of abandoned farms. Two common names, slash pine and old-field pine, are testimony to this habit.

Considered as Weeds

Since most landowners tend to regard such pines as nothing more than mere wooden weeds, they will let harvesters for the Christmas market take truckloads of them for next to nothing, and are very apt to let the individual householder out for a week-end drive help himself to a tree for nothing, if he will haul it away in his luggage-rack. Despite the low esteem in which little pines are often held, they do make attractive Christmas trees.

No matter what kind of tree you buy, or go out into the country and harvest for yourself, you can prolong its useful life and postpone the ill day when it sheds its needles, by setting its cut stem in a container of water. Various sprays have been tried for helping keep foliage on Christmas trees, but just giving them water, as if they were cut flowers, is the treatment recommended by the U. S. Department of Agriculture.

When you get your tree home, saw about three inches off the bottom of the trunk. This will remove the part of the water-conveying system that has become clogged with air bubbles until it will no longer function. Have a can or larger container of water ready, where you intend to set your tree.

Better guard against skidding by securing small blocks around the can with nails into the floor, or some such device. Set the cut end of the trunk into the water as quickly as possible then arrange such braces and guy-wires as will be needed to hold the tree erect. Add fresh water to the supply in the can as needed. This will materially prolong the useful life of your Christmas tree.

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CHEMISTRY

Luminous Paints Add to Christmas Tree's Beauty

➤ ORNAMENTS, light bulbs and even the needles and branches of the Christmas tree will continue to glow long after all other illumination has been turned off if a little time is taken to add daubs of luminous paint. Many broken ornaments can be put to use again and unusual decorations are made possible by the same method.

Luminous paints are available in prepared forms already mixed in a liquid vehicle. Or they may be prepared by mixing the powder, sometimes found in educational kits, in a clear lacquer, shellac or mucilage. The powder also may be applied as a dust to a surface treated to make it temporarily sticky.

If you get the luminous material in powdered form it is a good idea to prepare about two ounces of each of the following adhesives. Make a celluloid cement by cutting clear, discarded photo film into tiny slivers about a sixteenth inch wide and an inch or so long, and drop them into acetone. Cutting into tiny slivers expedites solution which will occur in a day or two if left standing. Be sure to cork the bottle.

The thin, syrupy liquid is to be used as a "stickum" for glass and metal articles. It should not be used on tree branches. For the second solution thin ordinary mucilage by adding about half of its bulk of clean water. For the third, use a thin dilution of ordinary household shellac, diluting with denatured alcohol until you get a free-flowing liquid.

Test Surface Coating

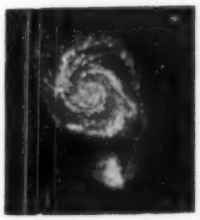
Before decorating any ornament test it for fastness of the surface coating. Apply a tiny drop of one of the adhesives near the top of the ornament. Let stand for a fraction of a minute, then wipe it off. If the color comes off try one of the other adhesives. Use the solution on the ornament which causes the least damage. On any ornaments which have seen their better days it will not matter much if color runs. You will be coating them all over, anyway.

Having established which solutions you will use with the respective ornaments, either dip the article into the adhesive or apply the adhesive with a brush, making designs, sketches, or write across the object in bold script. As soon as the material becomes tacky, sprinkle the surface with the luminous powder or dip and roll in a box of the chemical. Such a surface layer gives the most economical and effective use of the powder.

Or the luminous powder can be mixed with the adhesives mentioned to make a paint which can be handled the same as the bottled products obtained from the hardware, paint or auto supply stores.

For making the tree glow in the

★
ASTRONOMICAL PHOTOGRAPHS



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Do You Know?

The rarest bird in Africa is the *Congo peacock*, unknown to science a decade or so ago.

An outstanding preservative for wood is a chemical known as *pentachlorophenol;* it is deadly to termites and fungi.

New *papers* that retain strength even when soaked with water are used to wrap moist fresh vegetables during shipment to market; they keep them in good condition.

The greatest differences between day and night temperatures in the United States usually come at the time of the *equinoxes* in March and September, when days and nights are about equal in length.

Channel *catfish* of Midwestern rivers feed largely at night, with the heaviest period coming at dusk; feeding during the twilight hours is largely in deep water, but later the catfish come near the river banks.

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Apply dark, use the thinned mucilage. Apply to a few branches at a time with a spray gun, an insect spray, window washing spray or a blow spray. When the material is tacky, hold a sheet of paper under the branches to catch any loose powder and sprinkle, preferably through a strainer. Shake the branch to knock off any material not bound and use for the next location. This procedure will permit you to spread a small vial of powder over a large surface.

Treat the electric tree lamps in the same fashion as the other decorations. Bear in mind that to get a good glow the surface should be well covered with the luminous materials. A single layer is as effective as multiple coats. Only the surface layer gives off light. Remember, also, that a coated ornament loses its original brilliance and color. So use discretion if you want to get the most spectacular effect.

Holes in broken ornaments may be patched with strips of Scotch tape and the entire ornament may then be covered with the luminous material thus returning a worthless article to decorative value. Dry pine cones, grasses, straw flowers and paper cut-outs, fitted with wires for hanging and treated with the paint will add to the decorative scheme.

Apply maximum illumination by substituting light colors in those bulbs which illuminate the tree. Locate these where you have the greatest number of treated ornaments or branches. Then, when the lights go out, you will have something of which you will be justly proud.

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MEDICINE

Checks Incurable Disease

➤ ONE of the nitrogen mustards, war gas chemical, has brought some improvement to four veterans suffering from an incurable chronic disease known as Boeck's sarcoid, Dr. George E. Snider of the Veterans Administration Hospital at Fort Howard, Md., reported to the Southern Medical Association meeting in Baltimore.

The swelling of the glands went down, the acute inflammation of the iris of the eyes subsided and in some cases vision improved, chest symptoms were arrested, the skin eruption receded, and some patients gained weight.

In one patient, treated almost a year ago, the disease has almost completely disappeared.

The nitrogen mustard which brought this improvement cannot yet be called a cure for the condition, Dr. Snider emphasized. Patients with Boeck's sarcoid often have periods when they seem to be getting better, so more time must elapse before doctors can be sure the improvement in these four cases was due to the new treatment.

The chemical was given by injecting a dose into the veins every day for four days, allowing a rest period of about a month, and then giving a second series of injections. Nausea and vomiting followed each injection and the number of white blood cells was temporarily reduced.

Boeck's sarcoid, a rather rare condition, is considered an infectious disease, although no germ or virus cause has been found. Cough, shortness of breath and a little fever may occur in some cases and suggest that the patient has tuberculosis. Swollen lymph glands and salivary glands, inflammation of the iris of the eye, and a skin eruption that is painless and does not itch are other symptoms. In the early stages, the patient may not have fever but feels mildly sick with a distaste for food and vague digestive disturbances.

Almost any part of the body may be affected. Physicians have generally called Boeck's sarcoid a benign, meaning harmless, sickness. More recently they have realized that it may at times involve vital centers and lead to serious damage and even death.

Arsenic, gold, X-rays, radium, ultraviolet light and many other kinds of treatment have been tried without success.

Dr. Snider was led to try nitrogen mustard because this war gas chemical had brought improvement in cases of Hodgkins' disease, which has some similarity to Boeck's sarcoid.

Science News Letter, December 13, 1947

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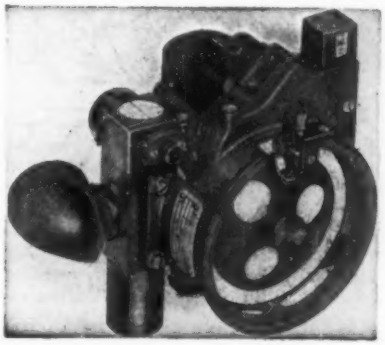

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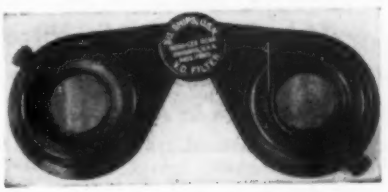

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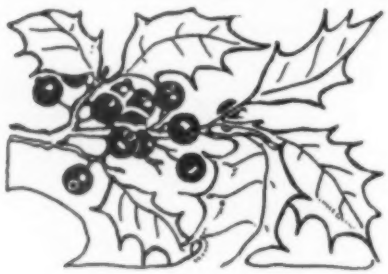

Is Holly Holy?

➤ HOLLY has been associated with the Feast of the Nativity for so many Christian generations that we have a tendency to ascribe a kind of holiness to the shrub itself. Indeed, its name is spelled "holy" in the first known written record in English, which dates from the middle of the twelfth century.

This, however, must be taken as simple coincidence, for "holy" and "holly" are really two quite distinct words, deriving from roots in the same early European language. "Holy" originally denoted wholeness, soundness, integrity. "Holly," despite its naive early spelling, comes from "holen," which was the Anglo-Saxon name for the shrub itself, and has no religious or moral significance at all. Holly is still called "hollin" in the lowland Scots dialect. Another medieval spelling for holly was "hooley"—but that must not be taken as indicating a possible Irish source! The modern Irish word for holly is "cuilen," pronounced (approximately) "killen"; language students state that it comes from the same basic root-word as the Anglo-Saxon "holen."

Most of the holly offered in the holiday market in this country is the native American species, gathered wild in our woods. This is a pity, for harvesting methods are exceedingly crude and destructive, so that holly trees and bushes are becoming increasingly scarce in the neighborhood of cities in our eastern states. The situation has become so bad that in some states the unauthorized gathering of wild holly is forbidden by law, though enforcement of the statutes is rather uneven.

European holly, raised mostly in the Pacific Northwest, is also obtainable, though naturally at higher prices than the plundered native species. It is distinguished by the glossier sheen of its leaves, which are usually also more prickly than those of the American holly, and by its larger, brighter red berries. Some people buy little holly bushes and keep them growing the year round.

Holly is used to a considerable extent, in the parts of the country where it will grow, as a yard shrub and especially for hedges. Since holly flowers have distinct sexes, borne on different bushes or trees, it is important when planting it to make sure that your stock is the female or berry-producing kind. It used to be necessary to plant one male bush for every dozen or so female specimens, to insure berry-bearing through pollination. However, this is no longer necessary, since some of the recently discovered synthetic growth-control chemicals will cause unpollinated female flowers to develop berries.

Science News Letter, December 13, 1947

GEOGRAPHY

Atomic Proving Grounds in Pacific Resembles Bikini

➤ ENIWETOK atoll, designated by the Atomic Energy Commission as permanent mid-Pacific proving ground for atomic weapons, is excellently adapted for the purpose. Westernmost of the Marshall group, it is a couple of hundred miles due west of Bikini and about twice that distance northwest of Kwajalein; thus well isolated both for security purposes and for safety of other atolls from harmful by-products of atom-bomb explosions.

It resembles Bikini in both size and shape of its lagoon, which is roughly elliptical, with its greater axis about 20 miles in length and its shorter axis about 15. There is thus ample anchorage for all naval, auxiliary and target craft that may be needed. There is an excellent deep-water entrance—so good, indeed, that when the American amphibious attack was staged in mid-February of 1944, the whole convoy steamed right into the lagoon, with warships blasting Jap batteries into silence as they passed through the channel.

Although major air traffic will doubtless continue to make most use of the Pacific crossroads at Kwajalein, it is possible to land even large planes at Eniwetok. Even in war days, the Japs had a 4,000-foot airstrip, and this has been much improved. The Atomic Energy Commission statement indicates that there is more land surface here than at Bikini, which will make for more comfortable elbow-room, both for airplane landings and the setting up of test instruments.

Science News Letter, December 13, 1947

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BUYING YOUR OWN LIFE INSURANCE—Maxwell S. Stewart—*Public Affairs Comm.,* Pamphlet No. 134, 32 p., illus., 20 cents.

CHEMISTRY IN OUR TIME—George and Ruby Glockler—*Crofts,* 667 p., illus., $4.50. For college students and for adults who do not plan to be chemists.

CURRENT BIOGRAPHY: 1946, With Index, 1940-1946—Anna Rothe—*H. W. Wilson,* 734 p., $5.00. Life histories of 319 persons throughout the world who figured in history in 1946.

THE EVERGLADES: River of Grass—Marjory Stoneman Douglas—*Rinehart,* 406 p., illus., $3.50. A well written account of this unusual area—its wild life, its people, its history; another in the "Rivers of America" series, timely because of the recent dedication of the Everglades National Park.

GENERAL BIOLOGY—James Watt Mavor—*Macmillan,* 3rd ed., 986 p., illus., $5.50. A basic text on the fundamentals of botany and zoology.

THE HYBRID-CORN MAKERS: Prophets of Plenty—A. Richard Crabb—*Rutgers Univ.,* 331 p., illus., $3.00. A history of the revolution in the growing of this important food and feed product, with a chapter on possible future developments.

INTRODUCTION TO IRAN—Elgin Groseclose—*Oxford Univ.,* 257 p., illus., $3.50. History and other aspects by Iran's former Treasurer General.

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VAT DYESTUFFS AND VAT DYEING—M. R. Fox—*Wiley,* 323 p., illus., $5.50. A guide to the practical application of vat dyeing for both industrial and student use.

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Science News Letter, December 13, 1947

⚙ *GUIDE MAPS on the walls of New York subway stations are made of plastic and need no frames or glass covers. The hard, tough plastic used is unharmed by heat, water, oil, or even by alcohol or lipsticks. Colors do not fade or discolor, and the surface is easily cleaned.*

Science News Letter, December 13, 1947

⚙ *COLD CHAMBER, which liquefies helium gas and can maintain a temperature of 456 degrees below zero Fahrenheit, almost absolute zero, is now being regularly produced, following a few experimental models now in laboratory use. It includes a heat exchanger which cools compressed helium to a liquid, and an expansion engine originally developed for oxygen generation.*

Science News Letter, December 13, 1947

⚙ *PHOTOELECTRIC EYE DEVICE, inexpensive type for use in homes, will close a window when it rains, turn on lights when darkness approaches, open garage doors when car lights strike it, and perform automatically other jobs. It must be used, of course, with suitable operating mechanisms.*

Science News Letter, December 13, 1947

⚙ *TICKET MACHINE prints, prices and issues a ticket to a passenger in an airplane station in less than five seconds. The machine in the picture, in a New York terminal, can issue tickets to cover at least 85% of the demands of travelers passing through the station.*

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⚙ *SELF-LIFTING FLATIRON has a single leg which retracts into the sole of the iron when it is in use, but otherwise projects at an angle to hold the iron on its heel with the heated surface away from the ironing-board. This self-lifting operation permits sit-down ironing.*

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⚙ *FRITTED GLASSWARE in the form of disks is for use in laboratories as filters to replace asbestos, which was diverted to other uses during the war. It is a hybrid of the glass family, employed for other purposes for several decades, and is described as a glass that leaks.*

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Photographs: Cover, p. 378 and 379, Fremont Davis; p. 375, Navy.

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